

Guidance for Completing the NH P Site Index

Tom Buob
UNH Cooperative Extension

Source Factors:

1. Soil Test Phosphorus (STP): Taken directly from the soil test report in ppm.
2. **Soil Test Rating***: Calculated by multiplying 0.2 times the STP level in ppm.
3. Fertilizer Rate: Actual amount (lbs/acre) of phosphorus fertilizer (P₂O₅) to be applied by the farmer.
4. Fertilizer Application Method: Timing and method of the fertilizer application used by the farmer.
5. Manure (biosolids) Application Rate: Actual amount (lbs/acre) of phosphorus (P₂O₅) to be applied by the farmer in the form of manure or biosolids. If an actual or current manure analysis is not available, use the NRCS table of nutrient concentrations based on the type of manure being applied. The same is true for biosolids applications, except the P concentration is obtained from the supplier or NHDES.
6. Manure (biosolids) Application Method: Timing and method of the manure or biosolids application by the farmer or applicator.
7. Organic Phosphorus Availability: This is obtained from Table 1a or 1b. Choose the coefficient that most closely matches the source material to be applied.
8. **Manure (biosolids) Rating**: Rate x Method x Availability
9. **Source Factor**: Soil Test Rating x Fertilizer Rating x Manure (biosolids) Rating

Transport Factors:

10. Erosion: the calculated soil erosion using RUSLE, taken directly from the conservation plan or equivalent.
11. Runoff Potential: based on soil type and field slope factors, and can be determined using table provided by USDA-NRCS.
12. Subsurface drainage: based on whether or not the field is artificially drained (tile) or if the field is near a stream and has rapidly permeable soils. "Random" drainage is a single or few tile lines in a field and "Patterned" drainage is when most or all of the field is drained with a full patterned drainage system.

13. **Contributing Distance:** the actual distance to a stream or surface water body from the lower edge of the field. Choose the distance category that contains the majority of the lower edge of the field.

14. **Transport Sum:** Erosion + Runoff Potential + Subsurface Drainage + Contributing Distance

15. **Modified Connectivity:** this accounts for management practices that modify P transport

a. If the field is within 150 ft. of surface water and a riparian buffer is present, select the appropriate Modified Connectivity factor (i.e., reduced transport value).

b. If the field is more than 150 ft. from surface water but there is a direct connection such as a pipe or ditch from the field to surface water then select the appropriate Modified Connectivity factor (i.e., increases transport value).

16. **Transport Factor:** (Transport Sum x Modified Connectivity)/22.

17. **Phosphorus Index Value:** 2 x Source Factor x Transport Factor

18. Refer to Table 2 for nutrient management guidance and recommendations.

- **Red Text indicates a calculated value**

Table 1a. Manure Phosphorus Source Availability Coefficients

Manure Source	Availability Coefficient
Dairy:	
Liquid	0.9
Bedded Pack	0.8
Beef	0.8
Alum Treated	0.2
Poultry:	
Broiler	0.8
Layer	0.9
Turkey	0.9
Duck	0.9
Swine Slurry	1.0

Table 1b. Biosolids Phosphorus Source Availability Coefficients

Biosolids Source	Availability Coefficient
Biological nutrient removal	0.8
Alkaline stabilized	0.4
Conventionally stabilized	0.3
Composted	0.3
Heat-dried	0.2
Advanced-alkaline stabilized	0.2

Table 2. Phosphorus Index Management Guidance.

Value	Risk Rating	Management Guidance
0 to 59	Low	Nutrients can be applied to meet the Nitrogen crop requirement. <u>Low</u> potential for P loss. Maintenance of current management practices is recommended to minimize the risk of adverse impacts on surface waters.
60 to 79	Medium	Nutrients can be applied to meet the Nitrogen crop requirement. <u>Medium</u> potential for P loss. The risk of adverse impacts on surface water quality exists. An assessment of current nutrient management and conservation practices is recommended to minimize the risk of future P losses.
80 to 99	High	Nutrients should be applied to meet the Phosphorus crop removal. <u>High</u> potential for P loss and adverse impacts on surface waters. Soil and water conservation measures and P-based management are needed to minimize the risk of P loss to surface water.
100 or greater	Very High	No Phosphorus should be applied. <u>Very High</u> potential for P loss and adverse impacts on surface waters. Conservation measures and a P-based management plan should be implemented to minimize P losses to surface waters.

One approach to using this tool is to enter the current levels and practices used by the farm operator, and then, depending on the “risk rating”, adjust the management to reduce risk. Timing and method of application can often be adjusted without too much trouble and can significantly reduce the risk of P movement to surface water.

Erosion can often be reduced by using NRCS conservation practices that result in lowering the transport factor. If high risk levels cannot be lowered by a change in management, fields can sometimes be managed as subunits. This can reduce the risk level in part of the field and may minimize the overall impacts on the cropping program.